

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.: 09/902,475 (Reissue) Confirmation No.: 7468
Applicant(s): Dominique Briere
Filed: July 9, 2001
Art Unit: 1722
Examiner: Davis, Robert B.
Title: BLOW MOLDING DEVICE FOR PRODUCING THERMOPLASTIC
CONTAINERS

Docket No.: 011496/236625
Customer No.: 00826

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF UNDER 37 CFR § 41.37

This Appeal Brief is filed pursuant to the "Notice of Appeal to the Board of Patent Appeals and Interferences" filed December 6, 2007.

1. ***Real Party in Interest.***

The real party in interest in this appeal is Sidel S.A. of Le Havre, France, the assignee of the above-referenced patent application.

2. ***Related Appeals and Interferences.***

The parent reissue application, Application No. 09/553,413 now issued RE39,769, was the subject of an appeal. In that appeal, The Board of Patent Appeals and Interferences reversed a rejection based on recapture in a Decision on Appeal mailed February 24, 2006 (Appeal No. 2006-0123). Appellant notes that the original claims of U.S. Patent No. 5,968,560 were reissued without amendment in reissue patent RE39,769.

3. ***Status of Claims.***

The continuation reissue application on appeal was originally filed with Claims 1-33 with an accompanying preliminary amendment canceling Claims 1-21 and 32-33. During prosecution of the continuation application, new Claims 32-51 were added with new Claims 32-44 eventually being canceled. Accordingly, Claims 22-31 and Claims 45-51 remain pending in the continuation reissue application.

Claims 22-31 and Claims 45-51 are the subject of this appeal.

Claims 22-31 and 45-50 stand twice rejected under 37 C.F.R. § 1.175(b)(1) until a supplemental reissue declaration is provided. The Appellant provided an executed supplemental reissue declaration on November 29, 2007 and has not received any responsive action from the United States Patent and Trademark Office.

Claims 48-50 stand twice rejected under 35 U.S.C. § 251 as being an improper recapture of subject matter surrendered during prosecution of the application for patent from which U.S. Patent No. 5,968,560 issued.

Claim 51 stands once rejected under 35 U.S.C. § 251 as being an improper recapture of subject matter surrendered during prosecution of the application for patent from which U.S. Patent No. 5,968,560 issued. Claim 51 also stands once rejected under 37 C.F.R. § 1.175(b)(1) until a supplemental reissue declaration is provided. The Appellant provided an executed supplemental reissue declaration on November 29, 2007.

4. ***Status of Amendments.***

No claim amendments were filed after the last rejection mailed on June 1, 2007. A response to the June 1, 2007 office action was filed November 29, 2007 containing a supplemental declaration executed by all of the inventors and arguments asserting patentability of the pending claims. Appellant has not yet received any responsive action from the United States Patent and Trademark Office.

5. ***Summary of Claimed Subject Matter.***

The present invention relates to improvements made to machines and articles of manufacture for use in the production by blow-molding of thermoplastic containers such as plastic bottles. Blow molding begins with a pre-heated tubular blank known in the art as a preform, which resembles a plastic test tube with a threaded neck. The preform is placed inside a mold or shell and then rapidly expanded using compressed air. In general, the improvements expedite the process of changing the inner mold or shell when a new container shape is desired.

Claims 22-26 are directed to a mold assembly for use in manufacturing molded thermoplastic containers. The mold assembly includes two mold shells containing half impressions of a substantial portion of the container to be molded and two mold shell holders which define a cavity for receiving respective mold shells. The shell holders are in at least partial mutual thermal-conduction contact with a respective shell holder, and the shell holders are shaped to be supported by two mold carriers made in the form of enveloping structures moveable one with respect to the other. The mold assembly also includes at least two axial positioning assemblies which fix the mold shells' in an axial direction with respect to the mold shell holders. The claim limitations of the identified claims are fully supported by the disclosures in U.S. Patent No. 5,968,560, for which the present application is a reissue (*see e.g.*, column 3, lines 43-60; column 4, lines 35-46; column 4, lines 55-65 and Figs. 1-4).

Claims 27-31 are directed to an article for use in manufacturing molded thermoplastic containers. This article includes a mold shell and at least two coupling members that fix the mold shell in an axial direction with respect to a mold shell holder. The mold shell holder defines a cavity for receiving the mold shell such that they are in at least partial mutual thermal-conduction contact with the shell holder. The mold shell holder is also shaped to be supported by a pair of mold carriers made in the form of enveloping structures moveable on with respect to the other. The claim limitations of the identified claims are fully supported by the disclosures in U.S. Patent No. 5,968,560, for which the present application is a reissue (*see e.g.*, column 3, lines 43-60; column 4, lines 35-46; column 4, lines 55-65 and Figs. 1-4).

Claims 45-46 are directed to a mold shell holder assembly for use in manufacturing molded thermoplastic containers. The mold shell holder assembly includes two mold shell holders, which define a cavity shaped to receive a mold shell in at least partial mutual thermal-conduction respective contact with its respective mold shell holder. The shell holders are shaped

to be supported by two mold carriers made in the form of enveloping structures that are movable one with respect to the other. The mold shell holder assembly also includes at least one quick-fixing locking member configured for removably securing a mold shell to a respective one of the mold shell holders. The quick-fixing locking member includes a selectively retractable locking member portion. The claim limitations of the identified claims are fully supported by the disclosures in U.S. Patent No. 5,968,560, for which the present application is a reissue (*see e.g.*, column 3, lines 43-60; column 4, lines 35-46; column 4, lines 55-65; column 4, line 66 - column 5, line 18, and Figs. 1 and 2).

Claim 47 is directed to a mold shell holder assembly for use in manufacturing molded thermoplastic containers. The mold shell holder assembly includes two mold shell holders each defining a cavity shaped to receive a mold shell in at least partial mutual thermal-conduction respective contact. The mold shells are shaped to be supported by two mold carriers made in the form of enveloping structures moveable one with respect to the other. Also included are two axial positioning assemblies positioned along each of the shell holders by which the shell holder may be fixed in an axial direction with respect to a respective mold shell. The claim limitations of the identified claim are fully supported by disclosures in U.S. Patent No. 5,968,560, for which the present application is a reissue (*see e.g.*, column 3, lines 43-60; column 4, lines 35-46; column 4, lines 55-65; and Figs. 1 and 2).

Claims 48 and 49 are generally directed to mold shell assemblies for use in manufacturing molded thermoplastic containers. The mold shell assembly includes a mold bottom which defines a base impression of a base portion of a container to be molded and a pair of mold shells. The mold shells each define a half impression of a substantial portion of the said container to be molded and are configured to be supported by the mold carriers made in the form of enveloping structures via interposed mold shell holders. The mold shell holders are shaped to be supported by the said mold carriers made in the form of enveloping structures. In addition, the mold shells further define one or more bearing surfaces sized and shaped to receive a quick-fixing locking member. The quick-fixing locking members include a selectively retractable locking member portion for removably securing the said mold shells to a respective one of the said mold shell holders. Furthermore, the mold shells define outer walls shaped to be in at least partial mutual thermal-conduction contact with the mold shell holders. The claim limitations of the identified claims are fully supported by disclosures in U.S. Patent No. 5,968,560, for which

the present application is a reissue (*see e.g.*, column 3, lines 43-60; column 4, lines 35-46; column 4, lines 55-65; column 4, line 66 - column 5, line 18, and Figs. 1 and 2).

Claims 50 and 51 are generally directed to mold shell assemblies for use in manufacturing molded thermoplastic containers. The mold shell assemblies include a mold bottom defining a base impression of a base portion of a container to be molded, and a pair of mold shells. The mold shells each define a half impression of a substantial portion of the said container to be molded and are configured to be supported by mold shell holders shaped to be supported by mold carriers made in the form of enveloping structures. The mold shells further define outer walls shaped to be in at least partial mutual thermal-conduction contact with the said mold shell holders. Claim 50 recites that the mold shells define two axial positioning grooves and Claim 51 recites that the mold shells define bearing surfaces to receive a quick-fixing locking member. The claim limitations of the identified claims are fully supported by disclosures in U.S. Patent No. 5,968,560, for which the present application is a reissue (*see e.g.*, column 3, lines 43-60; column 4, lines 35-46; column 4, lines 55-65; column 4, line 66 - column 5, line 18, and Figs. 1 and 2).

6. ***Grounds of Rejection to be Reviewed on Appeal.***

Claims 22-31 and 45-51 stand twice rejected under 37 C.F.R. § 1.175(b)(1) until a supplemental reissue declaration is provided. A supplemental declaration was filed November 29, 2007.

Claims 48-51 stand rejected under 35 U.S.C. § 251 as being an improper recapture of subject matter surrendered during prosecution of the application for patent from which U.S. Patent No. 5,968,560 issued.

7. ***Argument.***

I. Supplemental Declaration file November 29, 2007 overcomes rejection

Claims 1-21 and 45-51 stand twice rejected under 37 C.F.R. § 1.175(b)(1) until a supplemental reissue declaration is provided. A supplemental declaration, indicating that every error corrected in the present reissue application which had not been covered by a prior oath and/or declaration arose without any deceptive intent, was filed November 29, 2007 with the

United States Patent and Trademark Office. Accordingly, the Appellant requests the Board to reverse this rejection based on the Supplemental Declaration filed on November 29, 2007.

II. Recapture Rejection is Improper

The present application is a continuation of an application for reissue of U.S. Patent No. 5,968,560 ("the '560 patent"). The parent reissue application, Application No. 09/553,413, has issued as RE39,769. During prosecution of the parent reissue application, a recapture rejection was asserted. On appeal to the Board of Patent Appeals and Interferences, Appeal No. 2006-0123, the recapture rejection was reversed in a Decision on Appeal mailed February 24, 2006. Applicant respectfully asserts that the Board's reasoning for reversing the recapture rejection in the parent reissue application is applicable to the recapture rejection of the present claims and as a result, the recapture rejection should be withdrawn.

As background, the sole independent claim in the original application (i.e. Claim 1) initially recited a device for manufacturing containers that included a combination of shells, shell holders and mold carriers. During prosecution of the original application, Claim 1 was amended to further define the mold carriers as being "made in the form of enveloping structures." In the parent reissue application, the Applicant presented several claims that did not explicitly recite a mold carrier and these claims were rejected by the Examiner on a theory of recapture. On appeal, the Board concluded that the rejection was incorrect because the implicit limitation to the shell holders (i.e. that they be supported by the enveloping mold carriers) was carried forward to the mold assembly subcombination that was recited in the reissue application. It is important to note that the Board also stated that "[t]he reissue claims cannot include the mold carriers because the mold carriers are not part of the claimed mold assembly subcombination." (Appeal Decision p. 5).

On this same appeal, the Board rejected the Examiner's recapture argument that the limitation of "the shell holders being shaped to be supported by two mold carriers made in the form of enveloping structures" did not limit the shape of the shell holders. The Board reasoned that this claim language "limits the shell holders structurally to shapes that they are capable of being supported by two mold carriers made in the form of enveloping structures." (Appeal Decision, FN1, p. 4).

In the last Office Action, the Examiner has maintained his rejection of Claims 48-50¹ based on a theory of recapture despite language in the claims requiring that the mold shells are configured to be supported by enveloping mold carriers via interposed mold shell holders. The Examiner takes the position that these claims explicitly recite neither mold carriers nor mold shell holders and concludes that the Board's initial decision does not extend to claims 48-50 because, while the Board found that the mold shell holders were implicitly limited by the express amendment of the mold carriers, there was no implicit amendment of the mold shells.

Contrary to the Examiner's arguments, the Boards logic from the original appeal can and indeed should be extended to Claims 48-51. First, Claims 48-51 are directed to a mold shell assembly, which is a subcombination as opposed to the combination claim in the original patent Claim 1. Applying the Board's logic with respect subcombinations, Claims 48-51 cannot include the mold carriers or the shell holders because they are not part of the claimed mold shell assembly subcombination.

Additionally, the Board assessed during the earlier appeal whether the mold shell holders had been limited by the amendment made in the original patent to the mold carriers. In particular, the Board reasoned that shell holders were structurally limited by requiring them to be capable of being supported by mold carriers in the form of enveloping structures. Claims 48-51 of the present application include the same types of limitations. For example, Claim 48 requires:

said mold shells being configured to be supported by mold carriers made in the form of enveloping structures via interposed mold shell holders, said mold shell holders being shaped to be supported by said mold carriers made in the form of enveloping structures

Applying the logic from the Board's decision to the amendment in the original application, contrary to the Examiner's arguments, the mold shells of the original claims were structurally limited by requiring them to be "capable of being supported by two mold carriers made in the form of enveloping structures." (Appeal Decision, FN1, p. 4). In other words, the amendment in the original application implicitly limited the shape of the mold shells to shapes

¹ Applicant notes that the Examiner has rejected Claim 51 on the cover page of the June 1, 2007, Office Action, but did not note which ground for rejection applies. This claim was added with the RCE filed April 24, 2007.

that can be supported by such enveloping mold carriers. *Id.* Since reissue Claims 48-51 retain the requirement that the holders be shaped to be received by enveloping mold carriers, there is no recapture.

Finally, the Examiner has argued that "[i]t appears unlikely that [the] applicant intended to further define the shape of the shell in the amendment of the Patent-560 by amending the mold carriers which are made in the form of enveloping structures." To the contrary, clearly the amendment resulted in a claimed structure restricting the mold shells to those capable of being used with enveloping mold carriers. If the Examiner believes that the mold shells were not limited in the original application, then the Examiner should conclude that the Applicant did not surrender any subject matter with respect to the mold shell itself and withdraw the recapture rejection of mold shell claims.

8. ***Claims Appendix.***

Appendix A - a copy of the claims involved in the appeal.

9. ***Evidence Appendix.***

Appendix B - U.S. Patent No. 5,968,560

10. ***Related Proceedings Appendix.***

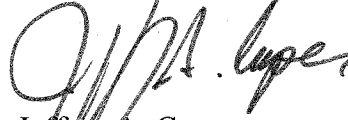
Appendix C – Decision on Appeal by the Board of Patent Appeals and Interferences, *Ex Parte Briere et. al.*, Appeal No. 2006-0123, mailed February 24, 2006.

CONCLUSION

In view of the foregoing arguments, Appellant respectfully submits that the Supplemental Declaration filed by Appellant places Claims 22-31 and new Claims 45-51 in condition for allowance. Appellant further submits that Claims 48-51 do not recapture subject matter surrendered during prosecution of the original application maturing into U.S. Patent 5,968,560. A decision from the Board of Patent Appeals and Interferences reversing the rejections of the pending claims is therefore earnestly solicited.

In re: Dominique Briere
Appl. No.: 09/902,475
Filing Date: July 9, 2001
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Respectfully submitted,

A handwritten signature in black ink, appearing to read "J. A. Cooper", written over the printed name.

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**APPEAL BRIEF TRANSMITTAL
(PATENT APPLICATION – 37 C.F.R. § 41.37)**

1. Transmitted herewith is the APPEAL BRIEF in this application, with respect to the Notice of Appeal filed on December 6, 2007.
2. ☐ Applicant claims small entity status.
3. Pursuant to 37 C.F.R. § 41.20(b)(2), the fee for filing the Appeal Brief is:
☐ small entity \$255.00
☒ other than small entity \$510.00
Appeal Brief fee due \$510.00
☐ Fee is Enclosed
☒ Please charge the fee to Deposit Account 16-0605.
☒ Any additional fee or refund may be charged to Deposit Account 16-0605.

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Appendix A – Claims Appendix

Appendix A – Claims Appendix

22. A mold assembly for use in manufacturing molded thermoplastic containers comprising:

two mold shells each containing a half-impression of a substantial portion of the container to be molded;

two mold shell holders each defining a cavity for receiving each said respective mold shell such that each said respective mold shell is in at least partial mutual thermal-conduction contact with its respective shell holder, said shell holders being shaped to be supported by two mold carriers made in the form of enveloping structures movable one with respect to the other; and

at least two axial positioning assemblies by which said mold shells are fixed in an axial direction with respect to said mold shell holders.

23. The mold assembly of Claim 22, wherein each of said at least two axial positioning assemblies comprises at least one meshing male coupling member disposed on at least one of said mold shells and mold shell holders, and at least one complementary meshing female coupling member disposed on at least one of said mold shells and mold shell holders.

24. The mold assembly of Claim 22, wherein said mold shell holders further comprise a number of internal fluid pipes and connections for the circulation of cooling and/or heating fluids.

25. The mold assembly of Claim 22, wherein at least one of said mold shells and/or mold shell holders define at least one cavity at the interface between said mold shells and mold shell holders into which pressurized fluid suitable for maintaining the sealed closures of the mold assembly may be interposed during the molding process.

26. The mold assembly of Claim 23, wherein said meshing male and female coupling members further comprise a system of one or more mating ribs and grooves in said mold shells and mold shell holders.

27. An article for use in manufacturing molded thermoplastic containers comprising:

a mold shell containing an impression of a substantial portion of a container; and

at least two coupling members by which said mold shell can be fixed in an axial direction with respect to a mold shell holder,

said shell holder defining a cavity for receiving said mold shell such that said mold shell is in at least partial mutual thermal-conduction contact with said shell holder, said shell holder being shaped to be supported by one of a pair of mold carriers made in the form of enveloping structures movable one with respect to the other.

28. The article of Claim 27, wherein said impression further comprises a neck portion, a sidewall portion, and a base portion.

29. The article of Claim 27, wherein each of said at least two coupling members further comprises either a groove or a rib disposed about the exterior surface of said mold shell.

30. The article of Claim 29, wherein said groove or rib is proximate a neck portion of said mold shell.

31. The article of Claim 27, further comprising:

a parting face adjacent a generally mating face of said shell holder; and

at least one clamping surface projecting from said parting face.

45. A mold shell holder assembly for use in manufacturing molded thermoplastic containers comprising:

two mold shell holders each defining a cavity shaped to receive a mold shell in at least partial mutual thermal-conduction respective contact;

said shell holders being shaped to be supported by two mold carriers made in the form of enveloping structures movable one with respect to the other; and

at least one quick-fixing locking member positioned on each of said mold shell holders, said quick-fixing locking member being configured to be engaged by a respective one of said mold shells for removably securing said one mold shell to a respective one of said mold shell holders, said quick-fixing locking member including a selectively retractable locking member portion.

46. The mold shell holder assembly of claim 45, further comprising:

at least two axial positioning assemblies positioned along each of said shell holders by which said shell holder may be fixed in an axial direction with respect to a respective one of said mold shells.

47. A mold shell holder assembly for use in manufacturing molded thermoplastic containers comprising:

two mold shell holders each defining a cavity shaped to receive a mold shell in at least partial mutual thermal-conduction respective contact;

said shell holders being shaped to be supported by two mold carriers made in the form of enveloping structures movable one with respect to the other; and

at least two axial positioning assemblies positioned along each of said shell holders by which said shell holder may be fixed in an axial direction with respect to a respective one of said mold shells.

48. A mold shell assembly for use in manufacturing molded thermoplastic containers comprising:

a mold bottom defining a base impression of a base portion of a container to be molded; and

a pair of mold shells each defining a half impression of a substantial portion of said container to be molded, said mold shells being configured to be supported by mold carriers made in the form of enveloping structures via interposed mold shell holders, said mold shell holders being shaped to be supported by said mold carriers made in the form of enveloping structures,

said mold shells further defining one or more bearing surfaces sized and shaped to receive a quick-fixing locking member including a selectively retractable locking member portion for removably securing said mold shells to a respective one of said mold shell holders, and

said mold shells further defining outer walls shaped to be in at least partial mutual thermal-conduction contact with said mold shell holders.

49. The mold shell assembly of claim 48, further comprising at least two axial positioning grooves positioned along said mold shells whereby said mold shells may be fixed in an axial direction with respect to said mold shell holders.

50. A mold shell assembly for use in manufacturing molded thermoplastic containers, comprising:

a mold bottom defining a base impression of a base portion of a container to be molded; and

a pair of mold shells each defining a half impression of a substantial portion of said container to be molded, said mold shells being configured to be supported by mold carriers made in the form of enveloping structures via interposed mold shell holders, said mold shell holders being shaped to be supported by said mold carriers made in the form of enveloping structures,

said mold shells further defining at least two axial positioning grooves positioned along said mold shells whereby said mold shells may be fixed in an axial direction with respect to said mold shell holders, and

said mold shells further defining outer walls shaped to be in at least partial mutual thermal-conduction contact with said mold shell holders.

51. A mold shell assembly for use in manufacturing molded thermoplastic containers comprising:

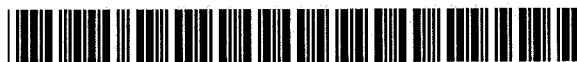
a mold bottom defining a base impression of a base portion of a container to be molded; and

a pair of mold shells each defining a half impression of a substantial portion of said container to be molded, said mold shells being configured to be supported by mold shell holders shaped to be supported by said mold carriers made in the form of enveloping structures,

said mold shells further defining one or more bearing surfaces sized and shaped to receive a quick-fixing locking member including a selectively retractable locking member portion for removably securing said mold shells to a respective one of said mold shell holders, and

said mold shells further defining outer walls shaped to be in at least partial mutual thermal-conduction contact with said mold shell holders.

Appendix B - Evidence Appendix



US005968560A

United States Patent [19]

Briere et al.

[11] **Patent Number:** **5,968,560**[45] **Date of Patent:** **Oct. 19, 1999**[54] **BLOW MOLDING DEVICE FOR PRODUCING THERMOPLASTIC CONTAINERS**

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Primary Examiner—Robert Davis*Attorney, Agent, or Firm*—Sughrue, Mion, Zinn, Macpeak & Seas, PLLC

[75] **Inventors:** **Dominique Briere**, Le Havre; **Léon Coisy**, Saint Martin du Manoir; **Paul La Barre**, Sainte Adresse; **Pascal Santals**, Le Havre, all of France

[73] **Assignee:** **Sidel**, Le Havre, France[21] **Appl. No.:** **08/945,089**[22] **PCT Filed:** **Apr. 16, 1996**[86] **PCT No.:** **PCT/FR96/00576**§ 371 Date: **Oct. 17, 1997**§ 102(e) Date: **Oct. 17, 1997**[87] **PCT Pub. No.:** **WO96/33059****PCT Pub. Date:** **Oct. 24, 1996**[30] **Foreign Application Priority Data**

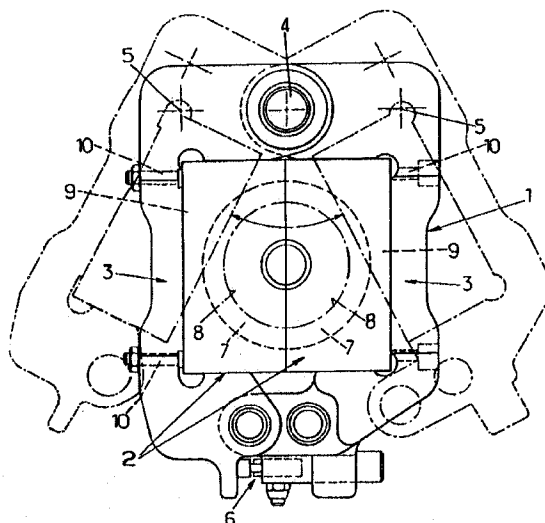
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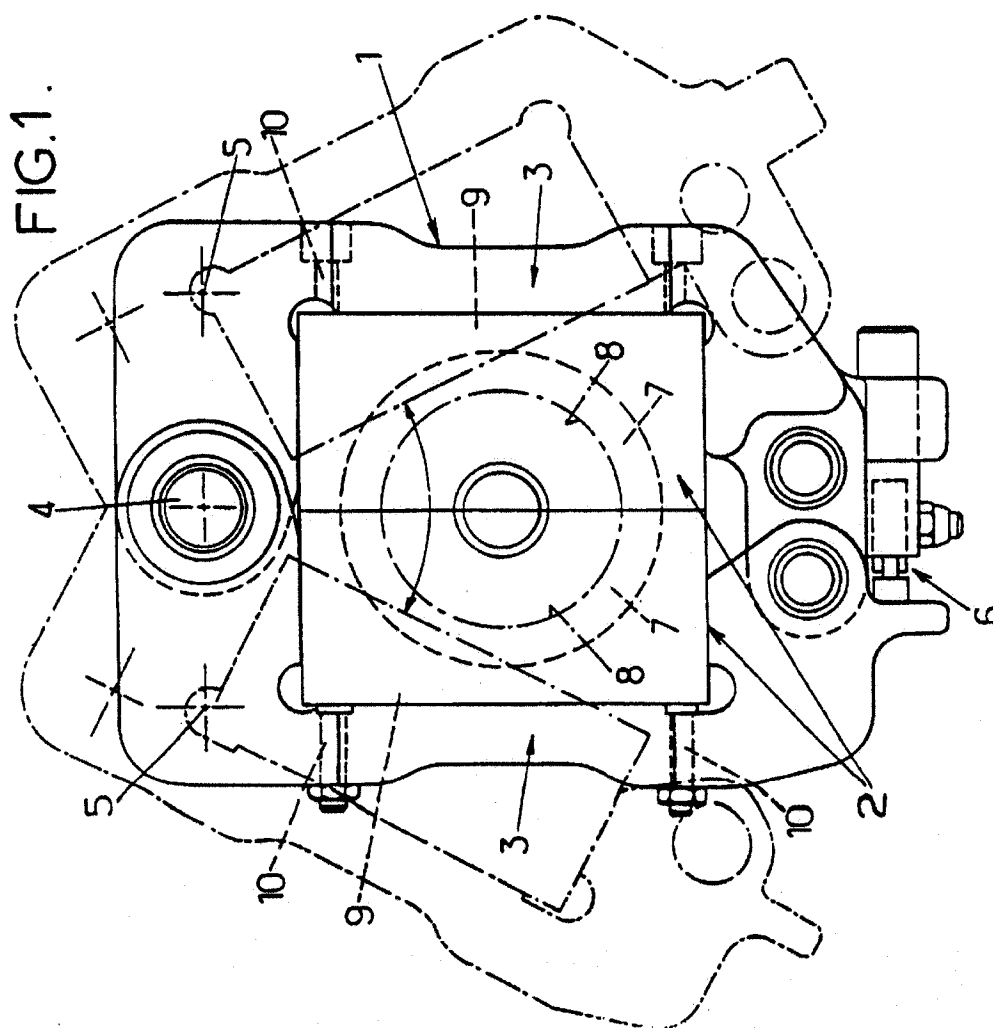
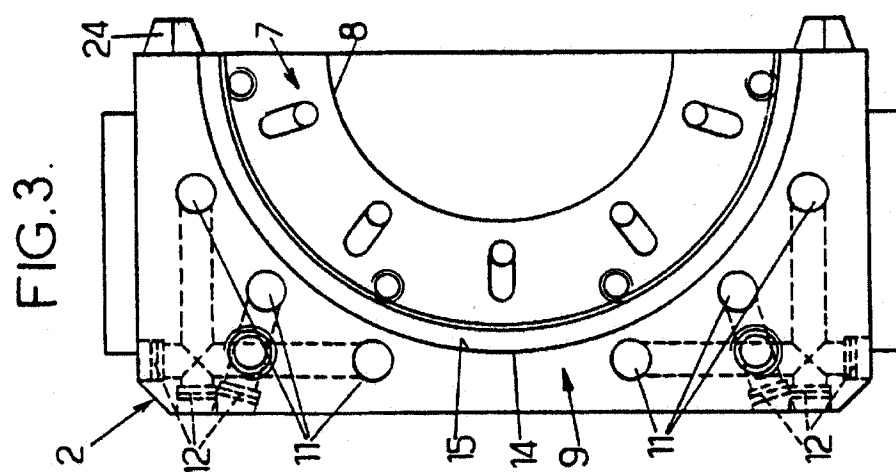
[51] **Int. Cl.⁶** **B29C 49/56; B29C 33/30**[52] **U.S. Cl.** **425/192 R; 425/195; 425/522; 425/541; 249/102**[58] **Field of Search** **425/183, 192 R, 425/195, 522, 541; 249/102**[56] **References Cited****U.S. PATENT DOCUMENTS**

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[57] **ABSTRACT**

The invention concerns a device for producing thermoplastic containers, in particular bottles, by the blow-molding or stretch blow-molding of a preheated preform. The device comprises at least one mould consisting of two half-molds (2) each supported by a mould carrier, the two mould carriers being movable relative to each other. Each half-mould (2) comprises a shell holder (9), supported by the respective mould carrier, and a shell (7) which is equipped with a half-impression (8) of the container to be obtained and can be rendered integral in a detachable manner with its shell holder (9) by rapid-fastening means (19-23). The shell (7) and the shell holder (9) are of complementary shapes such that they contact each other at least partially for heat conduction purposes whilst the pipes and connections for circulating and/or heating fluids are provided in the shell holder alone.

14 Claims, 3 Drawing Sheets



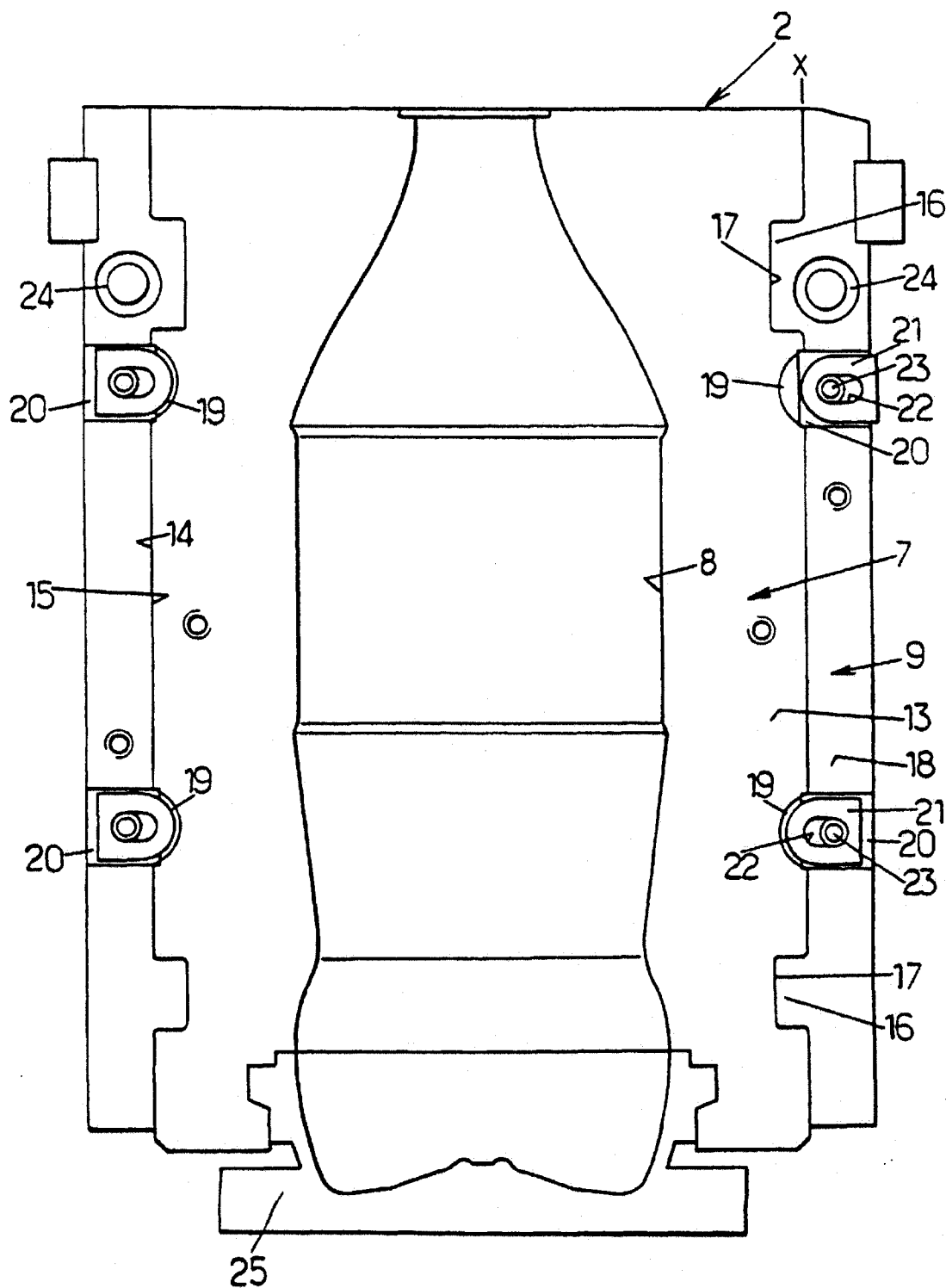


FIG.2.

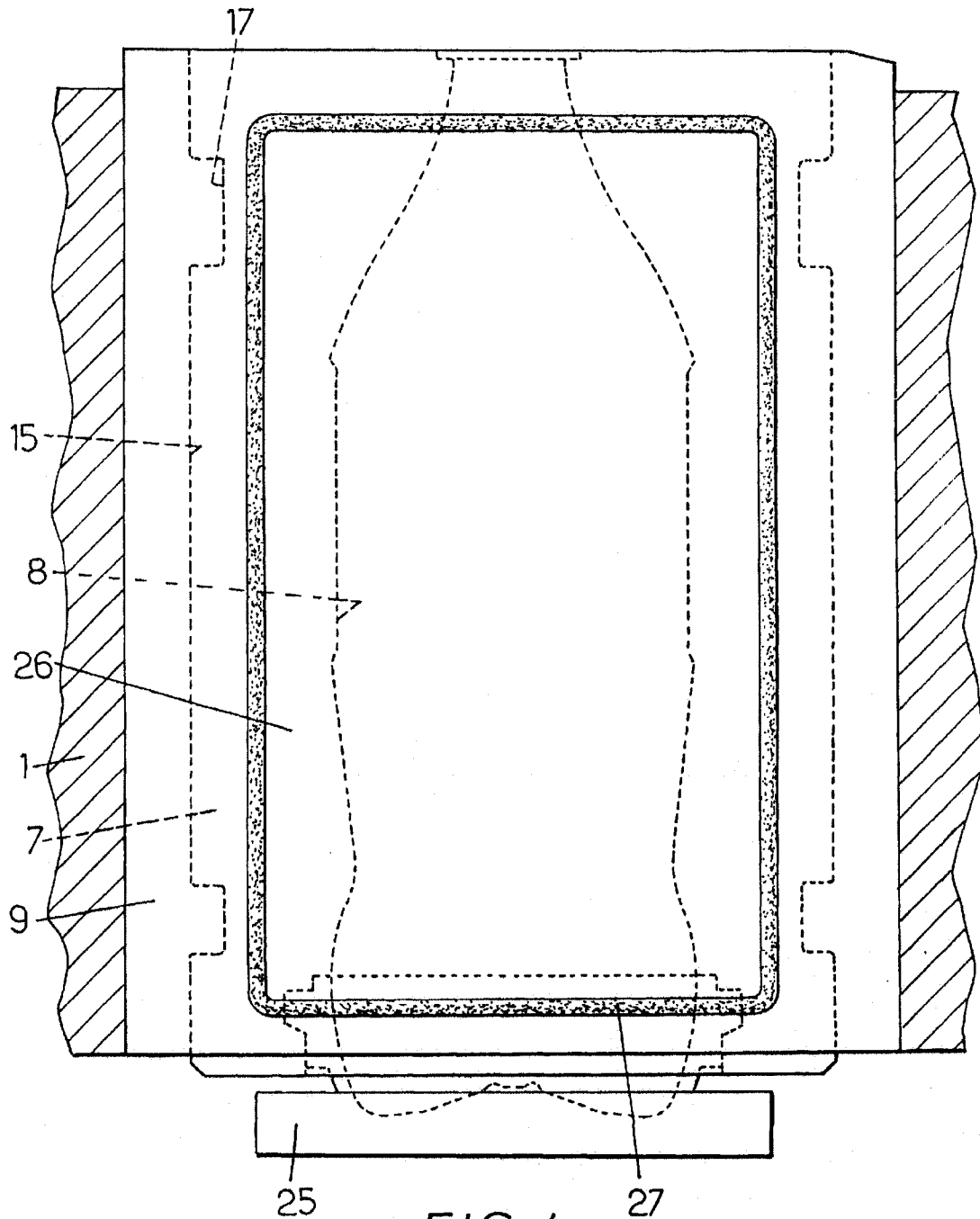


FIG. 4.

BLOW MOLDING DEVICE FOR PRODUCING THERMOPLASTIC CONTAINERS

The present invention relates to improvements made to devices making it possible to manufacture containers, in particular bottles, made of a thermoplastic by blow molding or stretch-blow molding of a preheated preform, the said device including at least one mold consisting of two half-molds respectively supported by two mold carriers which can move one with respect to the other.

It is common practice for the half-molds to be removably fixed to the respective mold carriers so that the said half-molds can be replaced or changed should they become damaged and/or worn and, above all, should containers of different shapes and/or sizes be manufactured, without it being necessary to replace the entire molding device.

However, such an arrangement is still far from being to the complete satisfaction of users. This is because each half-mold is heavy (for example about 25 to 30 kg for a steel mold): the fixing means must be able to support this weight and comprise many nut-and-bolt and/or screw connections; furthermore, each half-mold must be handled by several people and/or by means of a hoist, thereby requiring a suitable installation above the manufacturing device. Each half-mold is equipped with means for the circulation of one or more fluids for the cooling and/or heating of the walls of the impression: replacing each half-mold is accompanied by disconnecting, followed by reconnecting, of the corresponding fluid connections, all operations requiring time.

It is also necessary to add an economic consideration regarding the actual construction of each half-mold. The impression serving for pressure molding the final container must have a perfectly polished surface finish, to which, furthermore, the hot thermoplastic must not adhere: it is therefore necessary for the impression to be made of a suitable metallic material (for example stainless steel) which, moreover, may differ depending on the thermoplastic employed. Given the monobloc structure of the half-mold, it is therefore the totality of each half-mold which must be made of this suitable metallic material, this being a special and therefore expensive material, while the rear part of the half-molds merely fulfills a mechanical strength function, giving the mold rigidity and non-deformability, for which rear part a more ordinary, and therefore less expensive, material could be perfectly suitable.

The object of the invention is therefore essentially to remedy, as far as is possible, the drawbacks of the currently known manufacturing devices and to provide an improved device which allows quick and simple changing of the molding impressions in order to make it easier to adapt the device to the manufacture of various containers, and the improved structure of which device is, at the end of the day, less expensive than that of the current devices while still maintaining the same strength and non-deformability properties.

To these ends, a device for manufacturing thermoplastic containers, as mentioned in the preamble, is essentially characterized, being designed in accordance with the invention, in that each half-mold comprises a shell holder supported by the respective mold carrier and a shell which is provided with a half-impression of the container to be obtained and which can be removably fastened to its shell holder by quick-fixing means, the shell and the shell holder being of complementary shapes in order to be in at least partial mutual contact, with thermal conduction, while the pipes and connections for the circulation of cooling and/or

heating fluids, and optionally the members for guiding the half-molds in order to close the mold, as well as the pressure-compensating means for maintaining the sealed closure of the mold during blow molding, are provided exclusively in the shell holder.

By virtue of this arrangement, the part of the half-mold corresponding to the impression, which may be economically made of a suitable and relatively expensive material, and the rear part of the half-mold, which provides rigidity and mechanical strength and which may be made of a more ordinary and less expensive material (for example a standard aluminum alloy), are separated from each other. In addition, being less heavy, this rear part has less inertia, thereby contributing to facilitating the rotational movements of the half-molds. In addition, and above all, changing the impression in order to manufacture containers of various shapes merely requires changing the shell, which is of a much lower weight (for example about 10 kg) compared to the complete half-mold and which can therefore be handled manually: the handling installation (which, however, remains necessary in order to handle other components, and in particular the shell holders, of the device) may, however, be simplified and, above all, the procedure for replacing the shells is speeded up. This procedure is, furthermore, made even more rapid as there are no longer the fluid fittings to be disconnected, and then reconnected, these remaining permanently connected to the shell holders.

It is also possible to standardize the shell holders which are, from the outset, equipped with a number of fluid pipes from among which those useful for a given manufacture with a given impression may be selected. Thus, it is possible to create independent circuits making it possible to produce, in each shell holder and therefore in the shell, regions with differentiated temperature settings. Here again, this results in the possibility of reducing the manufacturing cost of the shell holders, which accompanies their standardized production in larger number.

Preferably, the mutually contacting mating faces of the shell and of the shell holder are approximately semicylindrical surfaces of revolution with an axis approximately parallel to the axis of the impression of the container to be manufactured; it is thus easier to produce mutually-contacting mating faces which ensure heat transfer as close as possible to that of a monobloc structure, something which may furthermore be obtained by providing for the shell and the shell holder to be in total thermal-conduction contact. However, it should be noted here that the arrangement according to the invention also provides the possibility of ensuring, when this proves to be desirable, that the shell and the shell holder are in partial thermal-conduction contact by leaving regions of limited thermal conduction, which also constitutes another means of creating, in the wall of the impression, regions with differentiated temperature settings.

It is desirable, in order to allow quick, and therefore easy, assembly of the shell on the shell holder, while still having precise relative positioning of the shells one with respect to the other, for the mutually-contacting mating faces, with thermal conduction, of the shell and of the shell holder to be provided with axial mutual-positioning means; preferably, the said axial mutual-positioning means comprise a system of one or more mating ribs and grooves extending circumferentially, which arrangement, in combination with the aforementioned semicylindrical configuration of the said mating faces of the Shell and of the shell holder, allows very simple assembly, with very precise positioning of the shell, using simplified fixing means.

Thus, advantageously, the means for quickly fixing the shell to the shell holder are provided on their respective

parting faces. In the case of semicylindrical mating faces, the said fixing means are located on the respective edges of the shell and of the half-shell, these being parallel to the axis of the impression; it is then desirable for the quick-fixing means to comprise, on one side, at least one stop for positioning the parting face of the shell with respect to the parting face of the shell holder and, on the other side, quick-screwing means on the parting face of the shell holder with a clamping surface projecting from the parting face of the shell, by virtue of which the shell is put into place on and locked onto the shell holder by curvilinear sliding of the shell, guided by the rib(s)/groove(s) system, in the cradle formed by the shell holder. In particular, if the mold carriers are rotationally pivoted with respect to each other, in order to form a "jackknife"-type mold, provision is made, in order to simplify connection and disconnection, for the above-mentioned stop to be located on the pivot side of the mold carriers and the quick-screwing means to be located on the opposite side.

In order to be more specific, it may be pointed out that, in a typical molding device designed in accordance with the invention, the time to replace a pair of shells is about 8 minutes while the time to replace a pair of half-shells in a prior device is about 20 minutes, using appropriate handling equipment.

The invention will be more clearly understood on reading the detailed description which follows of a preferred embodiment given solely by way of illustrative example. In this description, reference is made to the appended drawings in which:

FIG. 1 is a diagrammatic view from above of part of a molding device designed in accordance with the invention;

FIG. 2 is a front view of a two-piece half-mold of the device in FIG. 1; and

FIG. 3 is a view from below of a half-mold in FIG. 2.

FIG. 4 is a view from left, partially cutaway, of the device of FIG. 1.

Referring first of all to FIG. 1, this shows part of a device for manufacturing containers, in particular bottles, made of a thermoplastic such as polyethylene terephthalate PET, polyethylene apththalate PEN or another material, as well as alloys or blends thereof, by blow molding or stretch-blow molding a preheated preform.

This device includes at least one mold 1 consisting of two half-molds 2 respectively supported by two mold carriers 3 which can move one with respect to the other. In the example shown, the two mold carriers 3 are made in the form of two enveloping structures pivotally mounted on a common rotation axis 4 in such a way that the two half-molds can move apart by pivoting (a so-called "jackknife" structure). The mold carriers may be driven, in order to open and close the mold, in a conventional manner using a system of traction arms pivoted at 5 to the respective mold carriers a certain distance from the axis 4 of the latter.

Locking means, denoted in their entirety by 6, lock the two half-molds in the closed, molding position.

In accordance with the invention, each half-mold is made in the form of two subassemblies, namely a shell 7 provided with a half-impression 8 of the container to be manufactured and a shell holder 9 which supports the shell 7 and which is itself fastened to the corresponding mold carrier 2.

Each shell holder 9 may be considered as corresponding externally, in shape and size, to the mold carrier of the previous structures and it may therefore be fastened to the respective mold carrier 3 in the same manner, for example by a nut-and-bolt connection 10, it being possible for the number and disposition of the holes and internal threads to be identical to those of the previous arrangements.

As may be seen in FIG. 3, each shell holder is provided with internal pipes 11 and with fittings 12 which are necessary for the circulation of at least one fluid for cooling or heating the wall of the impression. Any number of these pipes and fittings may be provided and they may, for example, be independent of each other so as subsequently to allow them complete freedom, by externally connecting them appropriately, to constitute circuits of various and/or independent configurations depending on the type of containers to be produced and the type of material employed. Thus, it is possible to standardize to some extent the manufacture of the shell holders 9 and to reduce the manufacturing cost thereof.

Because of the fact that the impression 8 is physically separated from the shell holder 9, it is possible to make the latter from a less special material, for example an ordinary aluminum alloy, even when the shell is made of steel, thereby making it possible, here too, to reduce its cost; in addition, the shell holder 9 thus produced is lighter than a steel shell holder, which desirably decreases its inertia and has a favorable effect on the dynamic operation of the mold.

Each shell 7 has a half-impression 8 of the final container, hollowed out in its parting face 13. The external face 14 of each shell 7 has the general shape of a semicylinder of revolution, the axis of which is approximately parallel to the axis of the impression 8 of the container; in practice, the impression is coaxial with the semicylinder. The shell 7 rests in a cradle 15 of complementary shape cut out in the shell holder 9. The shapes of the shell and shell holder are perfectly matched and they are thus in as close a contact as possible. Provision may thus be made for the mating faces 14 and 15 of the shell 7 and of the shell holder 9 to be in complete thermal-conduction contact so that heat transfer from one to the other is as good as possible and approaches as far as possible that of a monobloc half-mold.

However, it is also conceivable for the said mating faces 14 and 15 to be only partially in thermal-conduction contact, with provision of regions of limited thermal conduction; it is thus possible to produce differentiated temperature settings in the wall of the impression. In order for the impression 8 to have the required polished finish and for the hot thermoplastic not to adhere to its surface, the shells are made from a suitable material, for example stainless steel. In order for the shapes of the mating parts of the shell holder 9 and the shell 7 to remain perfectly matched, it is necessary to choose materials exhibiting thermal expansion coefficients which are substantially identical.

In the example shown in FIG. 2, the container to be produced has a bottom of complex shape (petaloid bottom) and the requirements for demolding the container after it has been formed result in the provision of a separate mold bottom 25, distinct from the half-molds 2, which includes the impression of the bottom of the container. It will be noted here that FIG. 3 is a view from below of the half-mold in FIG. 2, the mold bottom 25 not being shown.

The axial mutual positioning of the shell holder 9 and of the shell 7 is achieved by a rib(s)/groove(s) set of mating elements which fit together, one in the other. As shown in FIG. 2, the shell 7 is provided with two grooves 17, hollowed out circumferentially in its external face 14 axially separated from each other; likewise, the cradle-shaped face 15 of the shell holder 9 has two ribs 16 which fit together without any clearance in the two respective grooves 17. Once the shell 7 has been placed in the shell holder 9, it can no longer move axially with respect to the latter but can only slide rotationally about its axis on the cradle 15.

In order fully to lock the shell onto the shell holder, quick-fixing means are provided in the parting face 13 of the

shell and in the parting face 18 of the shell holder. For this purpose, respective housings 19 and 20, hollowed out in the facing edges of the afore-mentioned parting faces 13 and 18, respectively, are provided. The bottoms of the housings 19 of the shell 7 constitute flat bearing surfaces on which may bear members for locking the shell holder 9. These locking members may be formed in many ways known to those skilled in the art. In the example shown in FIG. 2, these are projecting lugs 21 drilled with an elongate hole 22 and retained by a screw 23 fixed to the bottom of the corresponding housing 20 of the parting face 18 of the shell holder 9; this arrangement has the advantage that the shell is released as soon as the lugs 21 are unlocked and pushed back toward the outside, without it being necessary to remove the screws 23 completely. Notwithstanding this, the shell could also be locked onto the shell holder by using wide-head screws overlapping the flats of the housings 19, or else by using quick-face eccentric-head screws, etc.

It will be noted that in practice the two locking members 21 located on the side adjacent to the axis of rotation 4, in the case of a jackknife mold, do not have to be actuated and may thus constitute simple stops (with the possibility of adjusting the position of these stops) under which the flats of the respective housings 19 are brought when the shell is inserted into the shell holder, by causing the shell to slide rotationally in the latter. Moreover, given the position of these two locking members 21 located in the bottom of the open mold, their access is difficult and their removal would unnecessarily lengthen the process of replacing the shell 7.

As for the rest, each shell holder 9 is designed in the same way as a previous half-mold, which includes the elements necessary for correct operation of the molding device, and in particular the means 10 for fixing it to the corresponding mold carrier 3, the guiding fingers 24 (and the respective housings in the other shell holder) for closing the mold, the rear face provided with a chamber 26 and with an O-ring seal 27 for compensation as shown in FIG. 4. It is therefore possible, in a preexisting installation, to replace the conventional monobloc half-molds with two-element half-molds according to the invention.

Needless to say, and as results already from the foregoing, the invention is in no way limited to those of its methods of application and of its embodiments which have been more particularly envisaged; on the contrary, it embraces all variants thereof.

We claim:

1. Device for manufacturing containers, made of a thermoplastic by blow molding or stretch-blow molding of a preheated preform, the said device including at least one mold (1) consisting of two half-molds (2) respectively supported by two mold carriers (3) which are made in the form of enveloping structures and which can move one with respect to the other, characterized in that each half-mold (2) comprises a shell holder (9) supported by the respective mold carrier (3) and a shell (7) which is provided with a half-impression (8) of the container to be obtained and which can be removably fastened to its shell holder (9) by quick-fixing means (19-23), the shell (7) and the shell holder (9) being in complementary shapes in order to be in at least partial mutual thermal-conduction contact while the

pipes and connections for the circulation of cooling and/or heating fluids (11, 12) are provided exclusively in the shell holder.

2. Device according to claim 1, characterized in that the mating faces (14, 15) of the shell (7) and of the shell holder (9) are in total thermal-conduction contact.

3. Device according to claim 1, characterized in that the mating faces (14, 15) of the shell (7) and of the shell holder (9) are in partial thermal-conduction contact by leaving regions of limited thermal conduction.

4. Device according to claim 1, characterized in that the mutually contacting mating faces (14, 15) of the shell (7) and of the shell holder (9) are approximately semicylindrical surfaces of revolution with an axis approximately parallel to the axis of the impression (8) of the container to be manufactured.

5. Device according to claim 1, characterized in that the mutually contacting mating faces (14, 15) of the shell and of the shell holder are provided with axial mutual-positioning means (16, 17).

6. Device according to claim 5, characterized in that the axial mutual-positioning means comprise a system of one or more mating ribs (16) and grooves (17) extending circumferentially.

7. Device according to claim 1, characterized in that the means (19-23) for quickly fixing the shell (7) to the shell holder (9) are provided on their respective parting faces (13, 18).

8. Device according to Claim 4, characterized in that the means (19-23) for quickly fixing the shell and the shell holder are located on their respective edges parallel to the axis of the impression.

9. Device according to claim 8, characterized in that the quick-fixing means (19-23) comprise, on one side, at least one stop for positioning the parting face of the shell with respect to the parting face of the shell holder and, on the other side, quick-screwing means (23) on the parting face (18) of the shell holder (9) with a clamping surface (21) projecting from the parting face (19) of the shell.

10. Device according to claim 9, in which the mold carriers are rotationally pivoted with respect to each other whereby at least one stop is located on the pivot (4) side of the mold carriers (3) and the quick-screwing means are located on the opposite side.

11. Device according to claim 1, characterized in that the shell holder (9) is also provided with members (24) for guiding the half-molds in order to close the mold.

12. Device according to claim 1, characterized in that at least one of the shell holders is equipped with pressure-compensating means suitable for maintaining the sealed closure of the mold during blow molding.

13. Device according to claim 1, characterized in that the shell holders (9) are equipped with a number of fluid pipes, by virtue of which it is possible to create suitable circuits for a given manufacture with a given impression.

14. Device according to claim 1, wherein said containers are bottles.

* * * * *

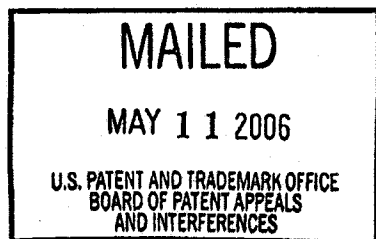
Appendix C - Related Proceedings Appendix

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DOMINIQUE BRIERE, LEON COISY, PAUL LA BARRE
and PASCAL SANTAIS



Appeal No. 2006-0123
Application 09/553,413

ORDER CORRECTING "DECISION" AND ERRATUM

The decision of record mailed February 24, 2006, for the above identified application was mailed with an incorrect application number 09/555,413 on the first page of the decision by the Board of Patent Appeals and Interferences. However, the correct application number is 09/553,413.

Appeal No. 2006-0061
Application 09/653,012

Accordingly, the February 24, 2006 "Decision" is corrected and replaced by the corrected page of the decision.

Any confusion caused by the inadvertent error in the earlier "Decision" is regretted.

BOARD OF PATENT APPEALS AND
INTERFERENCES

By:

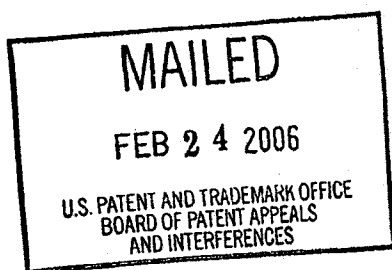
Terry J. Owens
Terry J. Owens
Administrative Patent Judge

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DOMINIQUE BRIERE, LEON COISY, PAUL LA BARRE
and PASCAL SANTAIS



Appeal No. 2006-0123
Application 09/553,413

HEARD: JANUARY 26, 2006

Before OWENS, WALTZ and FRANKLIN, *Administrative Patent Judges.*
OWENS, *Administrative Patent Judge.*

DECISION ON APPEAL

This appeal is from a rejection of claims 1-21 and 34-40.
Claims 15-21 and 34-40 were added by reissue.

Appeal No. 2006-0123
Application 09/553,413

THE INVENTION

The appellants claim a device and mold assembly for manufacturing molded thermoplastic containers. Claim 15, which claims the mold assembly, is illustrative:

15. A mold assembly for use in manufacturing molded thermoplastic containers comprising:

two mold shells each containing a half-impression of a substantial portion of the container to be molded;

two mold shell holders each defining a cavity for receiving each said respective mold shell such that each said respective mold shell is in at least partial mutual thermal-conduction contact with its respective shell holder, said shell holders being shaped to be supported by two mold carriers made in the form of enveloping structures movable one with respect to the other; and

at least one quick-fixing locking member by which at least one of said mold shells is removably secured to a respective one of said mold shell holders, said one quick-fixing locking member including a selectively retractable locking member portion.

THE REJECTION

The claims stand rejected under 35 U.S.C. § 251 as follows: claims 1-21 and 34-40 as being based upon a defective reissue declaration, and claims 15-21 and 34-40 as being an improper recapture of subject matter surrendered during prosecution of the application for patent from which U.S. patent no. 5,968,560 issued.

Appeal No. 2006-0123
Application 09/553,413

OPINION

We affirm the rejection based upon the reissue declaration being defective and reverse the rejection based upon recapture.

*Rejection based upon the reissue
declaration being defective*

The appellants do not challenge the rejection based upon the reissue declaration being defective but, rather, state that they will provide a supplemental reissue declaration (brief, page 2). We therefore summarily affirm that rejection.

Rejection based upon recapture

Appendix C of the appellants' brief shows that to get the '560 patent issued the appellants amended claim 1 during prosecution to include, after "two mold carriers (3)", "which are made in the form of enveloping structures and", and that claim 1 of the issued '560 patent, which is the sole independent claim in that patent, includes that limitation. Appendix C also shows that claim 1 claims a device for manufacturing containers and that new claim 15 of the reissue application claims a mold assembly, i.e., a subcombination as opposed to the combination claimed in claim 1, and that claim 15 includes the limitation "said shell holders being shaped to be supported by two mold carriers made in the form of enveloping structures". Since

Appeal No. 2006-0123
Application 09/553,413

claim 15 is a subcombination claim which claims only the mold assembly rather than the manufacturing device claimed in combination claim 1, claim 15 does not include the mold carriers but, rather, limits the shape of the shell holders to be supported by two mold carriers made in the form of enveloping structures. That limitation appears in each of the other new independent claims in the reissue application, i.e., claims 35, 36 and 39.

The examiner argues that the reissue claims are broader than the patent claims because the patent claims claim a combination which includes the mold carriers, whereas the reissue claims claim a subcombination which does not require the mold carriers (answer, pages 6-10). Thus, the examiner argues, the appellants are recapturing subject matter that does not require the mold carrier limitation. See *id.*¹

¹ The examiner also argues that "shell holders being shaped to be supported by two mold carriers made in the form of enveloping structures" does not limit the structure of the shell holders because no shape is given to the shell holders in figure 1 of the '560 patent (answer, page 9). The examiner is incorrect because that claim language limits the shell holders structurally to shapes that they are capable of being supported by two mold carriers made in the form of enveloping structures.

Appeal No. 2006-0123
Application 09/553,413

The claim limitation added to get the '560 patent issued expressly limits the two mold carriers such that they are made in the form of enveloping structures, but also implicitly limits the shape of the shell holders to shapes that can be supported by such enveloping mold carriers. That limitation on the shape of the shell holders has been retained in the reissue claims to the mold assembly subcombination. The new reissue claims cannot include the mold carriers because the mold carriers are not part of the claimed mold assembly subcombination.

Thus, the appellants are not recapturing subject matter pertaining to the claimed mold assembly that was surrendered to get the '560 patent issued. Consequently, we reverse the examiner's rejection based upon recapture.

DECISION

The rejection under 35 U.S.C. § 251 of claims 1-21 and 34-40 as being based upon a defective reissue declaration is affirmed. The rejection of claims 15-21 and 34-40 under 35 U.S.C. § 251 as being an improper recapture of subject matter surrendered during prosecution of the application for patent from which U.S. patent no. 5,968,560 issued is reversed.

Appeal No. 2006-0123
Application 09/553,413

No time period for taking any subsequent action in
connection with this appeal may be extended under 37 CFR
§ 1.136(a)(1)(iv).

AFFIRMED

Terry J. Owens
TERRY J. OWENS
Administrative Patent Judge

Thomas A. Waltz
THOMAS A. WALTZ
Administrative Patent Judge

Beverly A. Franklin
BEVERLY A. FRANKLIN
Administrative Patent Judge

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Appeal No. 2006-0123
Application 09/553,413

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